

# Next generation protein and cell therapies: solutions to debilitating diseases

*Tim Oldham PhD, CEO and Managing Director, AdAlta (ASX:1AD)*  
Overview for investors, 13 July 2023

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## AdAlta business and focus

**Purpose: going where antibodies cannot to address debilitating diseases**

*Producing a high-value, next generation protein and cell therapy product pipeline for diseases where traditional antibodies are ineffective*

### Discovery business

*Multiple high value product candidates for development or licensing*

### Product development business

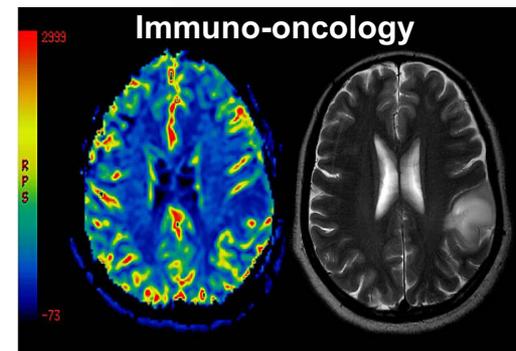
*Candidates progressed through value-adding development milestones for out-licensing or co-development*



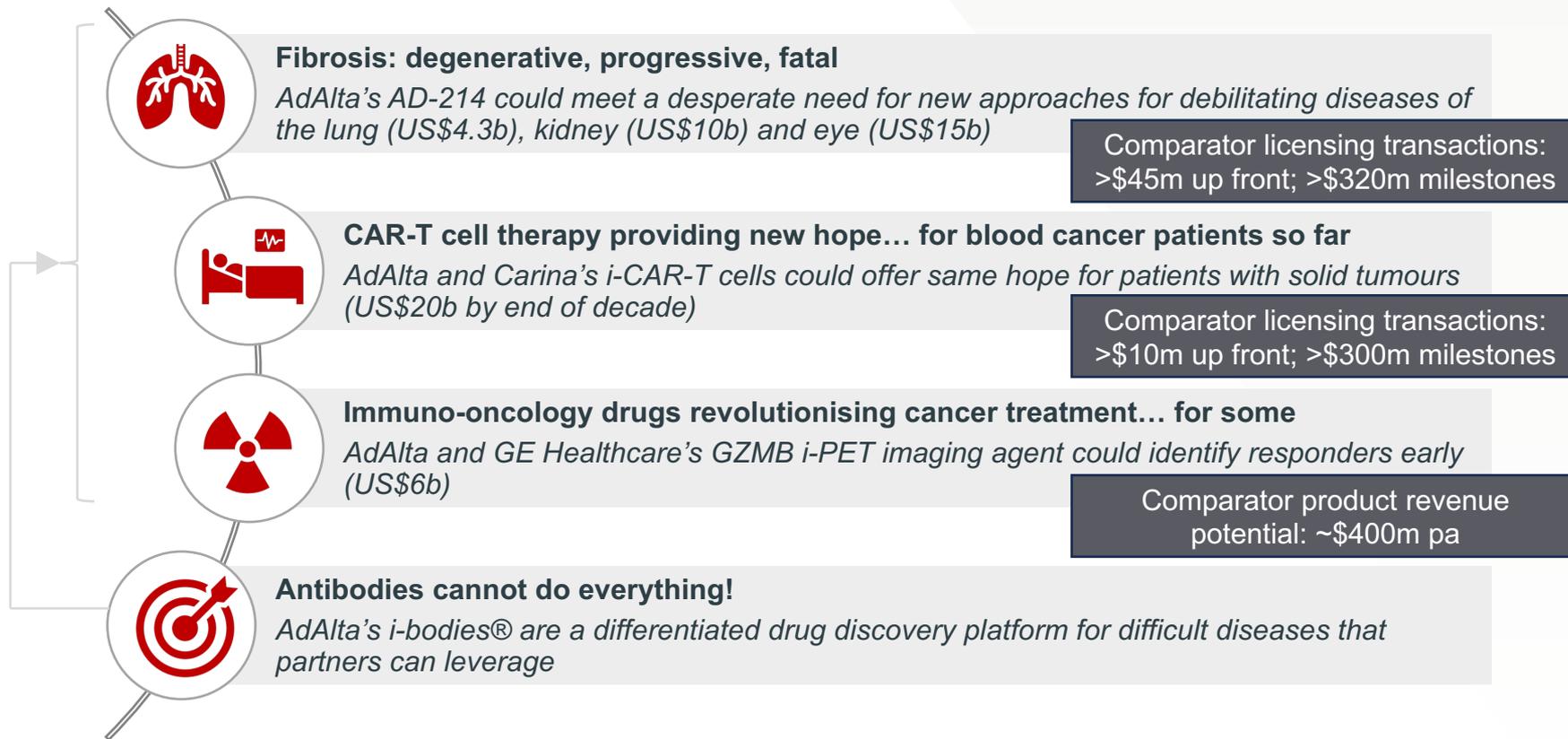
*i-body® platform*  
+  
*In-house discovery team*



*Experienced leaders, in-house protein engineering*  
+  
*Cost effective Australian location*



## AdAlta's portfolio: high value therapeutics and a platform to help other companies address challenging diseases in fibrosis and immuno-oncology



# AD-214 program

## The need: Idiopathic Pulmonary Fibrosis (IPF)

Scarring of the lungs reduces lung function:  
**irreversible, unpredictable, incurable**

**>490,000** people living with IPF<sup>2</sup>

**>40,000** people die every year

**3.8 years** median survival

**88%** aged 55 or older

Two current therapies had **US\$4.3b sales** in 2022<sup>2</sup> ...

... despite limited effectiveness, serious side effects

Many other fibrosis market opportunities

- Almost every organ: eye (**US\$15b**), kidney (**US\$10b**), cancer (**US\$1b** per indication)<sup>3</sup>
- “Long COVID” is a developing issue – further increasing the need for better anti-fibrotic drugs<sup>1</sup>
- Re-emergence of silicosis

<sup>1</sup> PM George, et al. “Pulmonary fibrosis and COVID-19: the potential role for antifibrotic therapy”, Lancet published online May 15, 2020.

<sup>2</sup> GlobalData, Idiopathic Pulmonary Fibrosis: Competitive Landscape, April 2023

<sup>3</sup> GlobalData, disease analysis reports



# AdAlta's solution: AD-214 is being readied for Phase II clinical studies and partnering

## AD-214: strong value proposition built so far

### First in class molecule targeting validated mode of action

- ✓ Competitively positioned

### Pre-clinical efficacy in multiple animal models of fibrotic disease

- ✓ Multiple indication potential

### Manufacturing process established

- ✓ Major investment done

### Phase I successfully completed

- ✓ Well tolerated, evidence of target binding

### Clinically viable dosing regimen

- ✓ Bridge between pre-clinical efficacy and Phase I results

### Strong intellectual property, regulatory position

- ✓ Patents protecting asset to 2036
- ✓ US FDA Orphan Drug Designation for IPF



## Next steps to advance to Phase II

### Phase I extension study H2 2023

- Extend safety to higher, target doses for Phase II
- Add data to inform partnering

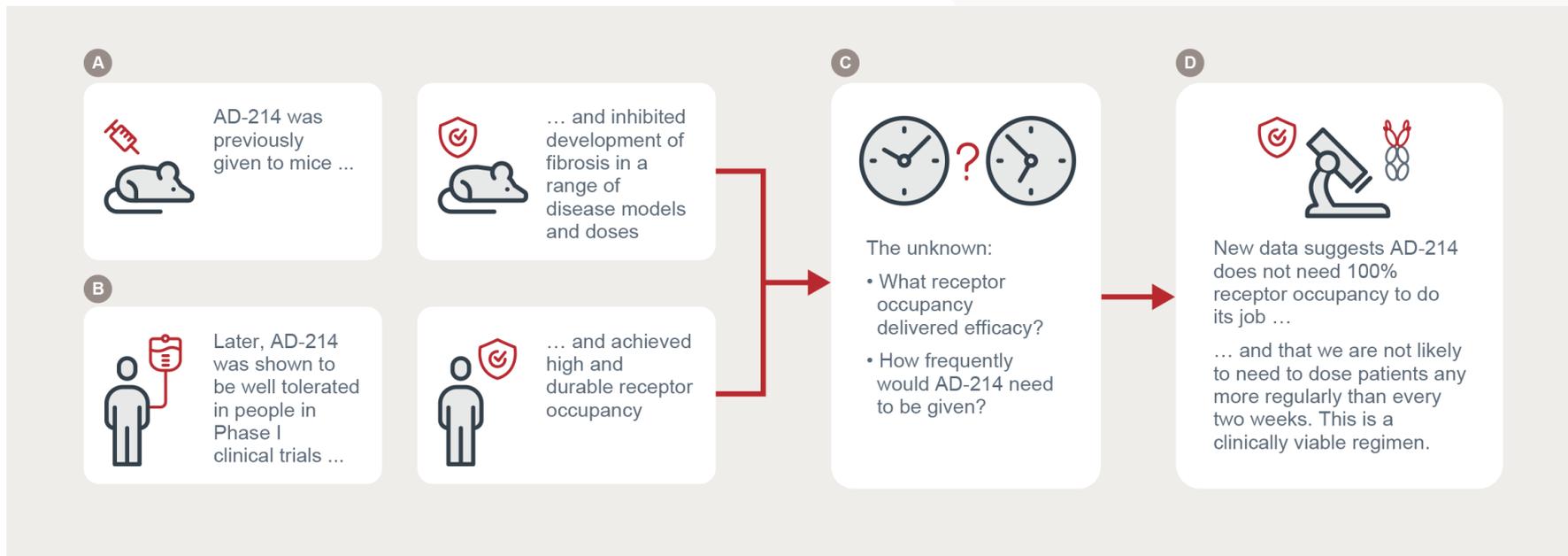
### Partnering discussions accelerating

- Potential for substantial return on investment
- Non-dilutive funding to advance to Phase II
- Preclinical investments to support diligence

### Planning and preparing for Phase II IV clinical trials (lung or kidney fibrosis)

- Phase II manufacturing, toxicology study slots booked
- Working well with vendors to maintain speed AND flexibility

## Potential for efficacy at clinically viable dosing regimen demonstrated



- A. AD-214 has demonstrated efficacy in multiple animal models of fibrotic disease
- B. In humans, AD-214 was able to maintain more than 60% receptor occupancy (blocking) for up to three weeks after IV infusion, depending on dose
- C. *Is this sufficient to achieve efficacy, given at least two weeks between IV doses is required for clinical viability?*
- D. **YES – new data shows that AD-214 does not require 100% receptor occupancy to meaningfully inhibit a model fibrotic process: efficacy of two weekly or longer dosing regimens is plausible**

## Phase I extension study delivers new data in 2023 to support partnering and Phase II

### AD-214 multidose Phase I extension clinical study

- Evaluating safety, PK and PD of multiple 10 mg/kg doses
- Similar design to prior Phase I study
- Utilises existing AD-214 inventory
- Top line data end-2023



### Establishes safety of AD-214 at likely maximum dose to be used in Phase II studies

- ✓ *Shorter dose escalation stage, reduced cost in Phase II study*

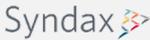
### Further explores PK, PD and safety trends observed in Phase I

- ✓ *Strengthens safety profile*
- ✓ *Better informs dosing levels and schedule for Phase II*

### Enhances partnering process

- ✓ *Additional data to address known and potential questions*
- ✓ *Maintains product development momentum*

## The value: pharma companies license fibrosis assets for significant prices: IPF examples

Date	Licensors/target	Licensee/acquirer	Transaction	Upfront payment to licensor	Contingent milestones	Clinical Phase at transaction
Aug-22		 <small>A Member of the Roche Group</small>	License	US\$80m	US\$620m	2
Nov-19			License	US\$390m	US\$1,000m	2
Nov-21			Acquisition	US\$254m	N/A	2 (Ready)
Nov-21			License	Not disclosed	€320m	2 (Ready)
Sep-21			License	US\$152m	US\$602m	2 (Ready)
Feb-21			License	Not disclosed	US\$517.5m	1
Jul-19			License	€45m	€1,100m	1
Oct-22			Acquisition	US\$255m	Not disclosed	Pre-clinical (+ platform)

AD-214 almost Phase II ready

## Co-developed immuno-oncology programs: i-CAR-cell therapies

## The need: multifunctional CAR-cell therapies

Therapy involves re-engineering patient's own immune cells so they "see" cancer as a pathogen – **living drug, single dose, potentially curative**

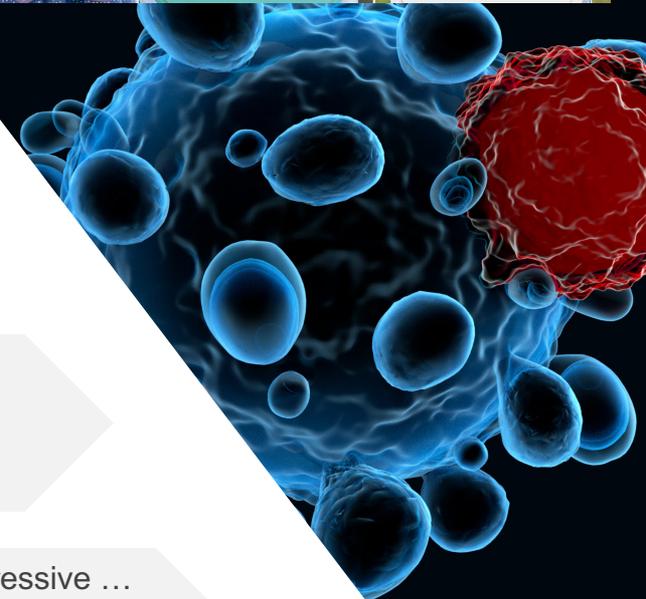
**>US\$2.6 billion** earned in 2022<sup>3</sup>

**US\$20.3 billion** CAR-T market forecast for 2028<sup>1</sup>

**6 FDA-approved CAR-T** therapies since 2017 ... but so far only for blood cancers

**90%** of cancers are solid tumours: harder to target, harder to access, immune suppressive ... needs new multifunctional CAR cell therapies

**>50%** of CAR-T revenues from solid tumours by 2030<sup>2</sup>



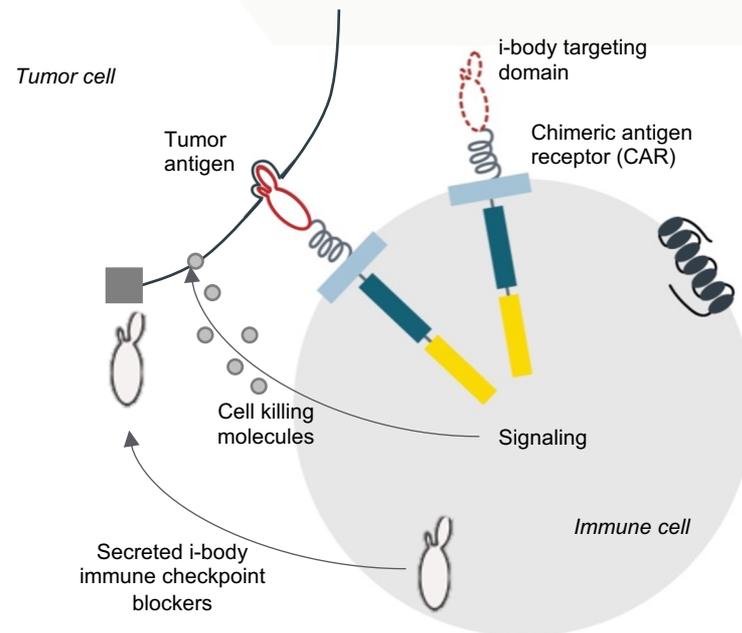
1. Grandview Research, "T-cell Therapy Market Size, Share & Trends Analysis" Feb 2021
2. Polaris Market Research, "CAR-T Cell Therapy Market Share, Size Trends, Industry Analysis Report", June 2021
3. Company websites and financial filings

# AdAlta's solution: i-bodies enable superior CAR constructs (i-CARs) when combined with partner platforms

**Tiny i-bodies take up LESS room in inserted gene, enabling TWICE the engineered functionality**

**Results in superior, multifunctional i-CAR products**

- **Targeting:** novel tumor antigens
- **Targeting:** Dual and bi-specific CARs for enhanced specificity, reduced tumor escape
- **Persistence:** overcome immune suppression “checkpoints”
- **Performance:** stimulate immune cells, enhance trafficking and overcome “exhaustion”



First partnership established with Carina Biotech – up to 5 targets

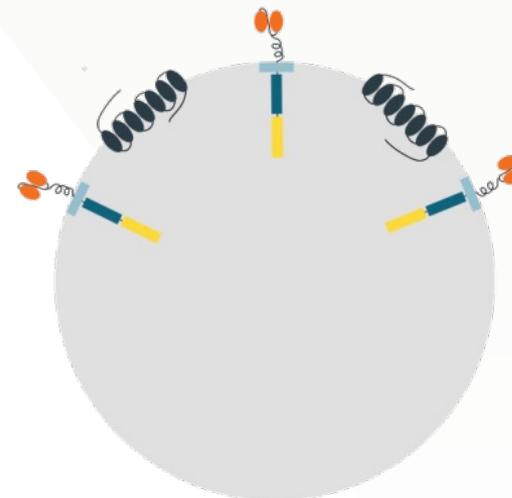
Significant industry interest (from potential additional partners) in using i-bodies for targeting CAR cells

## i-CAR-T assets: Carina co-development collaboration status

AdAlta and Carina are combining i-bodies and a world class CAR-T platform to create i-CAR-Ts that could offer improved precision, performance and persistence



- ✓ i-body enabled CAR-T (i-CAR-T) cells have successfully demonstrated *in vitro* cancer cell line killing (lysis)<sup>1</sup>
- ✓ Target A: 9 A-i-CAR-T cells screened *in vitro* against cancer cell lines, 3 to progress to more extensive *in vitro* screens and *in vivo* proof of concept H1 2023
- ✓ Next two targets (targets B and C) to commence i-body discovery in Q2 2023



## i-CAR-T: Valuable cell therapy partnering potential at pre-clinical proof of concept

AdAlta i-bodies + Carina cell therapy platform = i-CAR-Ts for solid tumor patients

3 of 5 programs underway; 1 entering proof of concept



Significant industry interest from potential additional partners; value could be realized at preclinical PoC

Date	Licensee	Licensor	No. of assets	Upfront/target (US\$m)	Deal value/target (US\$m)
Jun-22	 Bristol Myers Squibb	 Immatics	2	30	730
Jul-20	 SANOFI	 Kiadis <sup>pharma</sup>	1	20	988
Feb-20	 GSK	 Immatics	2	25	300
Nov-19	 Allogene <sup>Therapeutics</sup>	 Notch <sup>THERAPEUTICS</sup>	1	10	304
Oct-18	 Roche	 sqzBIOTECH <sup>®</sup>	1	45	1702
<b>Median value</b>				<b>25</b>	<b>730</b>

Co-developed immuno-oncology  
programs: i-PET imaging

## The need: Immuno-oncology (I/O) imaging

Immuno-oncology (I/O) drug market is worth **US\$95 billion**<sup>1</sup> ...  
... but only **20-40%** of patients respond<sup>2</sup> to therapy

Granzyme B (GZMB) is produced by immune cells to kill cancer: potential biomarker of I/O drug activation of the immune system

PET imaging GZMB could help identify **who has – and hasn't** – responded to I/O drugs before their tumor progresses: enabling timely switch to alternative strategies

**US\$6.4billion**<sup>3</sup> PET imaging agent market

**>US\$400m**<sup>4</sup> annual sales for largest products

## AdAlta's solution: funded discovery, shorter timeline to royalties for GZMB i-PET imaging asset

**AdAlta i-bodies + GE PET technology = GZMB i-PET asset to evaluate the effectiveness of immuno-oncology drugs**



- ✓ Fully funded discovery program plus downstream milestones, royalties
- ✓ i-body optimization, manufacturing development, pre-clinical proof of concept studies continuing
- ✓ Shorter time to royalty revenue than therapeutic product development
- Further updates as commercially relevant milestones are achieved



**Market feedback confirms value and importance of this target**

# The investment opportunity

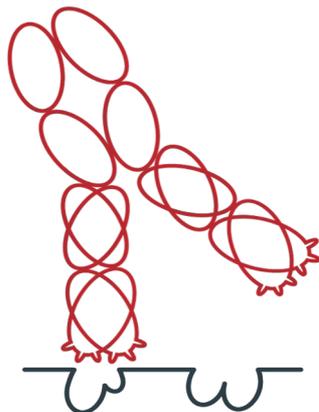
# i-bodies are a powerful drug discovery tool to engage targets that are intractable for traditional antibodies

## Small Molecules



Avoid off-target issues of small molecules

## Antibodies



~10% the size of human antibodies

Enables access to novel targets and efficient payload delivery

## i-bodies™



Unique binding capabilities drive unique pharmacology

## Flexible, modular formats

Current pipeline focus



CAR cell therapy



ADC/  
radiotherapeutic



Bi-specific



Fc-fusion



PEGylation



Naked i-body

## AdAlta's pipeline so far: five active assets plus additional partnering opportunities

Target	Product	Indication (route)	Discovery		Non-clinical		Clinical		Partner
			Discovery	Lead optimisation	Preclinical	IND enabling	Phase I	Phase II	
CXCR4	AD-214	Lung fibrosis						Available to license	
		Kidney fibrosis						Available to license	
		Eye fibrosis						Available to license	
	TBC	Oncology						GPCR 	
GZMB	GZMB-PET	Cancer imaging						 GE Healthcare	
Target A	A-i-CAR-T	Oncology							
Target B	B-i-CAR-T	Oncology							
Target C	C-i-CAR-T	Oncology							
GPCR Target X	TBC	Fibrosis						Available to co-dev (not currently active)	
RANKL	ADR3	Osteoporosis						Available to license (active academic collaboration)	
~25 other targets	i-body platform							Platform licenses available	

## Three partnering initiatives to generate return on investment

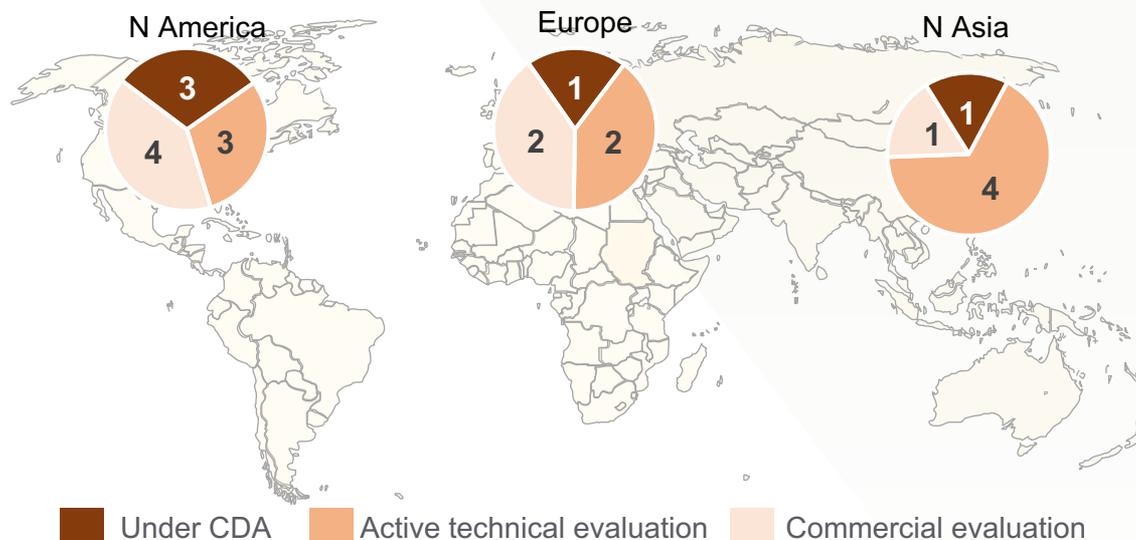
### Slate of partnering initiatives

1. Out-licence AD-214
2. Out-license i-body discovery platform
3. Access complementary, near to clinic assets

### Advisors



### AD-214 partnering prospects by stage<sup>1</sup>



Under CDA:

Initial commercial and technical evaluation complete, detailed technical evaluation under confidentiality agreement in progress

Active technical evaluation: R&D team have evaluated non-confidential data package and begun technical diligence calls with AdAlta

Commercial evaluation: Business development team has confirmed strategic alignment and with search and evaluation team are evaluating detailed non-confidential data package

Excludes prospects that have communicated "pass" or "will wait until Phase II data is available"

<sup>1</sup> Source: June 2023 internal board report post BIO23; location based on company HQ

## Upcoming CY2023 milestones: AD-214 and i-CAR-T data + multiple transaction upside potential

Strategy	Milestone	Impact
<b>Realise value of AD-214</b>	<ul style="list-style-type: none"> <li>• HREC approval, 1<sup>st</sup> participant Phase I extension (Q3 23)</li> <li>• Headline results Phase I extension (Q4 23)</li> <li>• <b>Progress existing partnering discussions (through 2023)</b></li> </ul>	<p><i>Generates new data for partnering, shortens Phase II study</i></p> <p><b><i>Potential first major ROI (return on investment)</i></b></p>
<b>Extend i-CAR programs</b>	<ul style="list-style-type: none"> <li>• A-i-CAR-T <i>in vivo</i> efficacy studies (H2 23)</li> <li>• Commence discovery on Carina A, B targets (Q2 23)</li> <li>• <b>Progress co-development discussions (through 2023)</b></li> </ul>	<p><i>Preclinical PoC; opportunity for early ROI</i></p> <p><i>Carina pipeline expansion – future value</i></p> <p><b><i>Potential non-dilutive financing for future programs</i></b></p>
<b>i-PET progress</b>	<ul style="list-style-type: none"> <li>• Lead candidate preclinical efficacy (timing not forecast)</li> </ul>	<p><i>Visibility to product potential, time to royalties</i></p>
<b>Invest in i-body™ platform</b>	<ul style="list-style-type: none"> <li>• i-body2.0 and research excellence program</li> <li>• <b>Evaluate synergistic technology, product transactions</b></li> </ul>	<p><i>Maintain competitive advantage</i></p> <p><b><i>Expand clinical stage pipeline, accelerate growth, leverage costs and capabilities</i></b></p>

## Corporate snapshot

### Key financial details (12 July 2023)

HQ and operations	Melbourne, Australia
<b>Market capitalisation</b>	<b>A\$13.2m</b>
Share price (12 month closing range)	A\$0.03 (\$0.022 - 0.058)
12 month return	(35)%
Ordinary Shares (daily volume)	441,526,298 (170,651)
Listed Options	78,075,186
Unlisted Options	14,184,060
<b>Cash (30 June 2023)*</b>	<b>A\$5.57m</b>

### Largest shareholders (12 July 2023)\*\*

	%
Platinum International Healthcare Fund	18.7
Meurs Group	14.6
FMI Pty Ltd atf Commonwealth of Australia	7.4
Sacavic Pty Ltd	5.9
Radiata Super Pty Ltd	4.3
HB Biotechnology Ltd	1.8
Other (1,358 total holders)	47.3
<b>Total</b>	<b>100%</b>

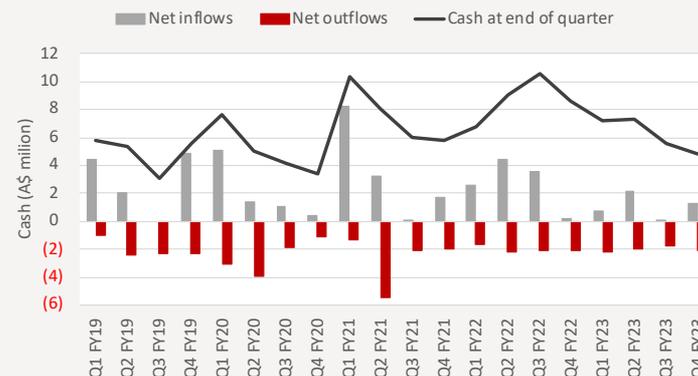
\* Excludes additional A\$1.82m raised received in July from oversubscribed rights offer announced 28 April 2023; a \$4m loan facility with Victorian Government is secured by, and payable on receipt of, FY23 R&D Tax Incentive rebate, anticipated Q4 2023

\*\* Non-diluted and excluding impact of 74.8m shortfall shares issued on 12 July 2023

### Share price performance (ASX:1AD) (last 12 months)



### Quarterly cash flows (A\$ million)



# Experienced, in-house team to execute from discovery through product development

## BOARD



**Paul MacLeman**  
CHAIR




**Tim Oldham, PhD**  
CEO & MANAGING DIRECTOR




**Robert Peach PhD**  
INDEPENDENT DIRECTOR




**Dr. David Fuller**  
INDEPENDENT DIRECTOR



## EXECUTIVE



**Patrick James, PhD**  
DIRECTOR, PLATFORM AND PRODUCT DISCOVERY




**Angus Tester, PhD**  
SENIOR MANAGER, PROJECTS AND PROGRAMS




**Janette Dixon, DBA**  
HEAD OF BUSINESS DEVELOPMENT




**Darryn Bampton**  
DIRECTOR, CLINICAL AND REGULATORY OPERATIONS




**Michael Rasmussen**  
CONSULTANT MEDICAL EXPERT




**Joseph Tyler**  
CONSULTANT CMC EXPERT

## SCIENTIFIC ADVISORY BOARD



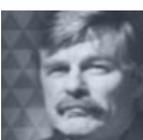
**Mick Foley, PhD**  
FOUNDING CHIEF SCIENTIST




**Brian Richardson**  
DRUG DISCOVERY & DEVELOPMENT EXPERT




**Steve Felstead**  
CLINICAL DEVELOPMENT

**John Westwick**  
PULMONARY DRUG DISCOVERY & DEVELOPMENT



## IN-HOUSE DISCOVERY & DEVELOPMENT TEAM



**8 PhD Staff + La Trobe Uni location**

Skills in protein chemistry, i-body discovery, product development, pre-clinical development

## Investment proposition



**i-body platform to create value**

*Strategy: invest to maintain competitive advantage*



**Fibrosis/inflammation  
AD-214: Phase II and partnering in \$4.3b market<sup>1</sup>**

*Strategy: realise return on investment*



**Immuno-oncology  
2 co-development collaborations  
(4 programs) in \$20b<sup>2</sup> and \$6b<sup>3</sup> markets**

*Strategy: progress and extend collaborations*



**Demonstrated product development and partnering expertise**



**“Blue sky” inorganic growth opportunities**

AD-214 outlicensing  
Additional platform transactions  
Synergistic technology, product transactions



**Steady news flow**

**Attractive current valuation with upside**

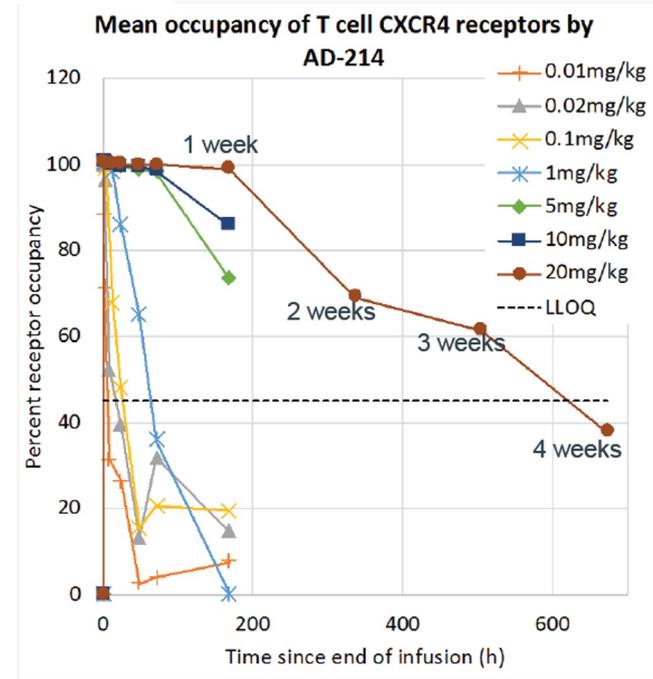
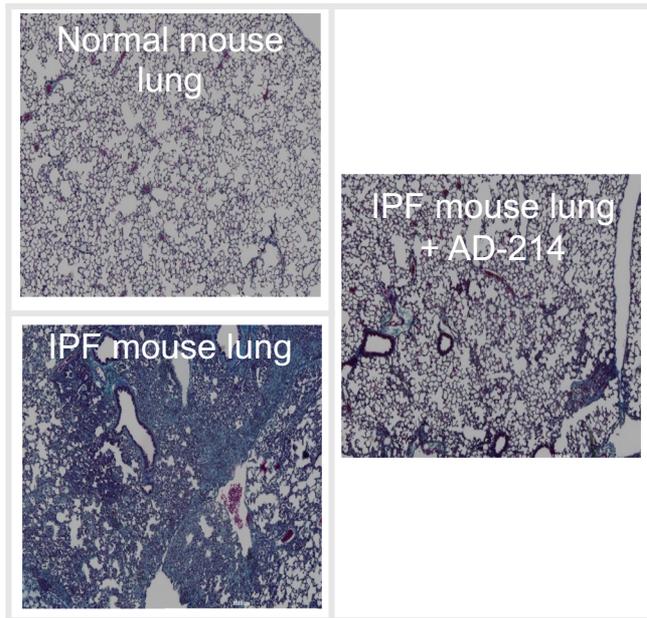
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# AD-214: efficacy validated in IPF mouse model; safety and target engagement in Phase I

AD-214 inhibited development of lung fibrosis in a mouse model at a wide range of doses and dose intervals<sup>1</sup>

AD-214 was well tolerated in Phase I clinical trials and demonstrated high and durable receptor occupancy<sup>2</sup>

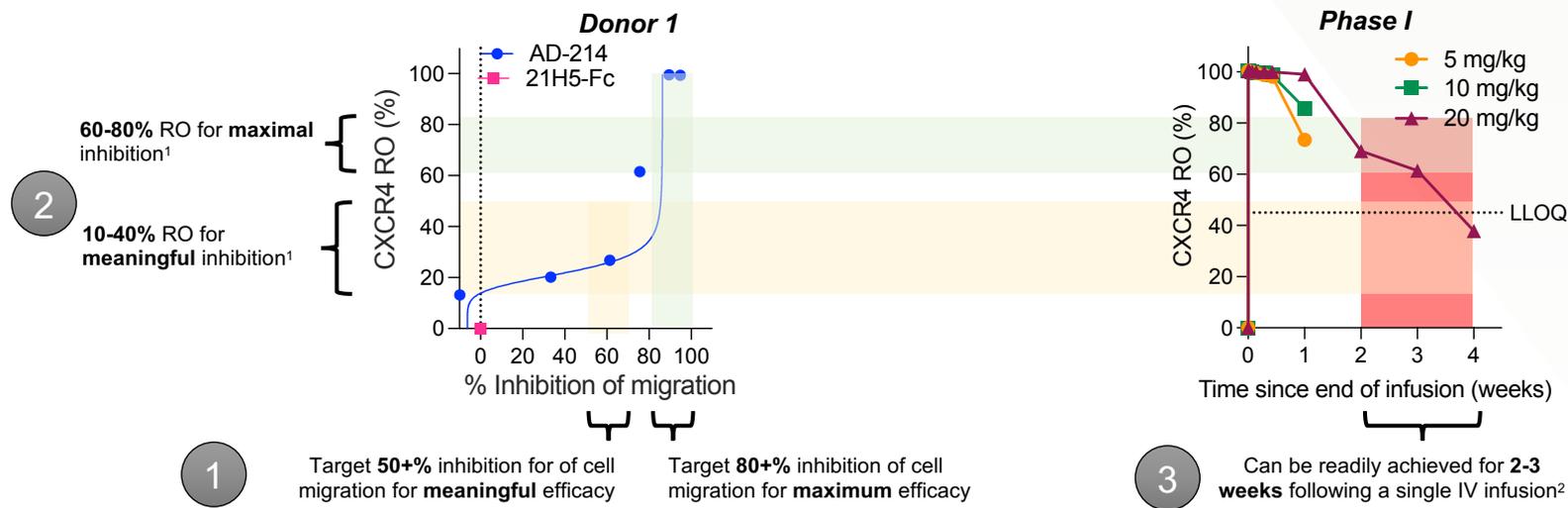


<sup>1</sup> Murigenics\_20210208. (Fibrosis induced by bleomycin at day 0; treatment commenced day 8; images from 10 mg/kg AD-214 every 4 days; statistical significance assessed using ANOVA and post-hoc Dunnett's test; ns (not significant) =  $p > 0.05$ , \* =  $p < 0.05$ , \*\* =  $p < 0.01$  relative to 21-day bleomycin vehicle; negative control is an i-body that does not bind specifically to CXCR4; error bars are standard error of the mean); test substances administered IV except pirfenidone and nintedanib orally

<sup>2</sup> Clinical Study Report: Protocol ID: ADA-AD-214-1A : Version 1 Dated 07 October 2022

## Clinically feasible, two weekly IV dosing regimens support sufficient receptor occupancy for to inhibit fibrotic processes

- Ex vivo cell migration is a model fibrotic process and inhibition of migration is a model of efficacy**
  - Maximum efficacy at >80% inhibition of migration (green). Meaningful efficacy at >50% inhibition (yellow)
- Less than full receptor occupancy (CXCR4 RO) is required for efficacy (meaningful inhibition of cell migration)**
  - 60-85% receptor occupancy is sufficient for maximum inhibition of cell migration
  - Meaningful inhibition at receptor occupancy as low as 10-40%
- Maintaining efficacious receptor occupancy levels is the objective of dose selection**
  - Efficacious receptor occupancy can be maintained for at least two weeks after an IV infusion in humans, a clinically viable dosing regimen<sup>2</sup>**



<sup>1</sup> AdAlta studies correlated AD-214 concentration with level of CXCR4 receptor occupancy and level of inhibition of SDF-1 $\alpha$  induced migration ex vivo on human T cells. Ranges are average of results from three healthy donors, only one donor shown

<sup>2</sup> Clinical Study Report: Protocol ID: ADA-AD-214-1A : Version 1 Dated 07 October 2022

## i-body-like sdAb CAR-T therapies are an emerging, validated approach

GROUP	YEAR	STAGE	SDAB CAR TARGET	AVAILABLE RESULTS
<b>AdAlta Ltd/Carina Biotech</b>	<b>2022</b>	<b>Proof of principle (in vitro)</b>	<b>Undisclosed</b>	
Johnson and Johnson <sup>1</sup> Legend Biotech	2022	Market	anti-BCMA CAR-T (biepitopic)	P3 results for n=97 patients <ul style="list-style-type: none"> <li>ORR: 97.9%; sCR 78.4%</li> <li>PFS: 77% (at 12 months)</li> <li>Overall survival: 89%</li> </ul>
Shenzhen Pregene Biopharma <sup>2</sup>	2021	Phase 1 (complete)	anti-BCMA CAR-T	P1 results for n=34 patients: <ul style="list-style-type: none"> <li>ORR: 88.2%; sCR/CR: 55.9%</li> <li>PFS(at 12 months): 53.7%; Median PFS: 12.1 months</li> <li>Overall survival at 12 months: 78.8%</li> </ul>
PersonGen BioTherapeutics <sup>3</sup>	2020	Phase 1 (ongoing)	CD7	P1 results for n=3 patients: <ul style="list-style-type: none"> <li>All patients had increased IL-6</li> <li>PFS observed in 3/3; remission observed in 2/3 patients</li> </ul>
PersonGen BioTherapeutics <sup>4</sup>	2022	Phase 1 (ongoing)	CD19	Not yet available
Legend Biotech <sup>5</sup>	2020	Phase 1 (ongoing)	Claudin 18.2	Not yet available
National Cancer Institute (USA) <sup>6</sup>	2022	Preclinical (mouse)	PD-L1	<i>In vitro</i> lysis of breast and liver tumor cells <i>In vivo</i> regression of liver tumor cells
Boston Children's Hospital <sup>7</sup>	2019, 2020	Preclinical (mouse)	PD-L1 EIIIB fibronectin	<i>In vivo</i> reduction of tumor growth and increased survival Improved activity of CAR-Ts secreting anti-CD47, anti-PD-L1 and anti-CTLA4 nanobodies

<sup>1</sup><https://www.clinicaltrialsarena.com/projects/carvykti-ciltacabtagene-autoleucl/>

<sup>2</sup>[https://ascopubs.org/doi/abs/10.1200/JCO.2021.39.15\\_suppl.8025](https://ascopubs.org/doi/abs/10.1200/JCO.2021.39.15_suppl.8025)

<sup>3</sup>[https://ascopubs.org/doi/10.1200/JCO.2020.38.15\\_suppl.3026](https://ascopubs.org/doi/10.1200/JCO.2020.38.15_suppl.3026)

<sup>4</sup><https://clinicaltrials.gov/ct2/show/NCT04691349?term=car-t+single+domain+antibody&draw=2&rank=1>

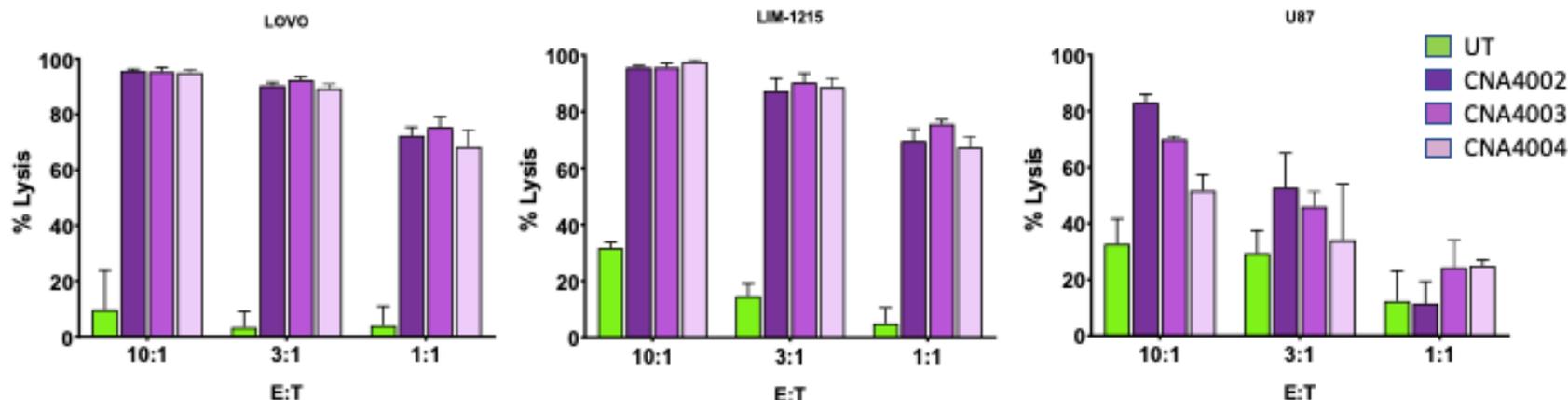
<sup>5</sup><https://clinicaltrials.gov/ct2/show/NCT04467853>

<sup>6</sup>[https://www.cell.com/molecular-therapy-family/oncolytics/fulltext/S2372-7705\(22\)00032-8#secsectitle0020](https://www.cell.com/molecular-therapy-family/oncolytics/fulltext/S2372-7705(22)00032-8#secsectitle0020)

<sup>7</sup><https://www.pnas.org/doi/10.1073/pnas.1817147116>; <https://pubmed.ncbi.nlm.nih.gov/32019780/>

# Building the first iCAR-T cell therapy: proof of principle results

i-body enabled CAR-T (iCAR-T) cells have been successfully generated by Carina and demonstrate *in vitro* cell killing (lysis)<sup>1</sup>



## Experimental details

- LOVO and LIM1215 are colorectal cancer cell lines; U87 is a glioblastoma cell line
- 3 different Carina CAR-T constructs incorporating i-body against a single target “X” (CNA4002/CNA4003/CNA4004)
- UT is an unmodified T-cell that does not result in significant killing (lysis) of these cell lines
- i-CAR-T cells manufactured with 97% transduction (i-body CAR insertion) efficiency
- i-CAR-T cells included 60-70% CD4+ (helper) and 20-30% CD8+ (cytotoxic – killer) T cells